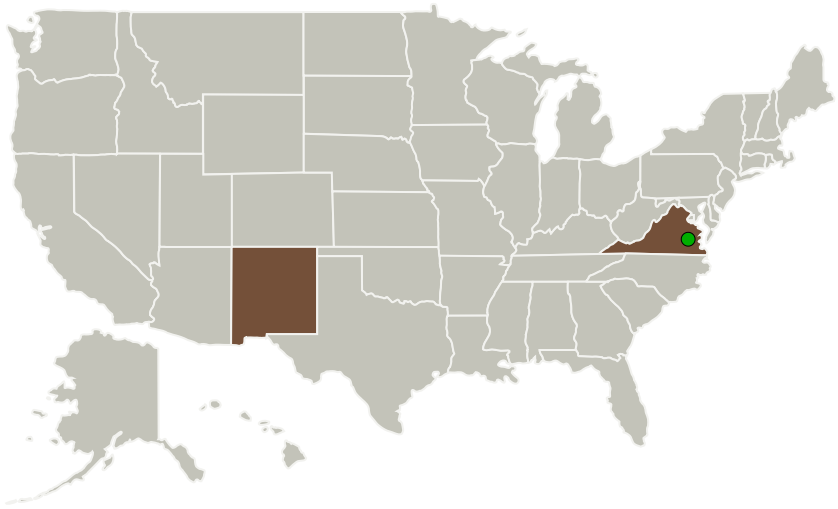
Novel Sensor for Wind Tunnel Calibration and Characterization, Phase I

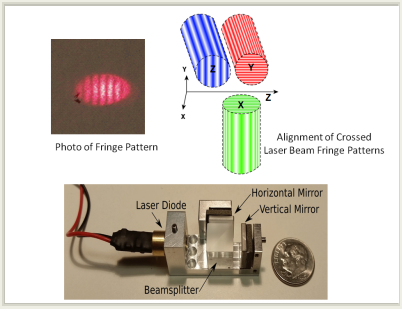
Completed Technology Project (2017 - 2017)

Project Introduction

Advances in computational capabilities for modeling the performance of advanced flight vehicles depend on verification measurements made in ground-based wind tunnels. As part of this process, the wind tunnels themselves must be well-calibrated and characterized. In particular to this project, the density, pressure and multi-component velocity of the air flow are of key interest. Southwest Sciences, in collaboration with the Southwest Research Institute, proposes to develop a novel, non-intrusive, laser-based measurement system for characterizing and calibrating the flow conditions upstream and downstream of test articles in wind tunnels. It uses inexpensive visible diode lasers and could be configured to match the needs of any particular type of wind tunnel, ranging from subsonic to hypersonic. The Phase I research will concentrate on developing and demonstrating the basic methodology of the system over a modest range of conditions. In Phase II we would expand the operation to the full range of expected conditions and verify the performance of the system in NASA-provided wind tunnels.

Primary U.S. Work Locations and Key Partners





Novel Sensor for Wind Tunnel Calibration and Characterization, Phase I Briefing Chart Image

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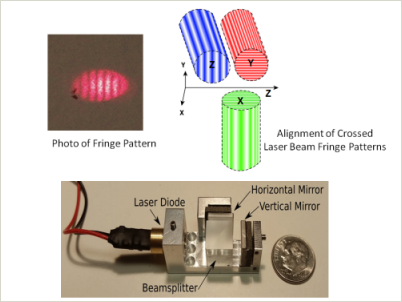
Organizations Performing Work	Role	Type	Location
Southwest Sciences, Inc.	Lead Organization	Industry	Santa Fe, New Mexico
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
New Mexico	Virginia

Images



Briefing Chart Image
Novel Sensor for Wind Tunnel Calibration and Characterization, Phase I Briefing Chart Image *(https://techport.nasa.gov/image/127505)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Southwest Sciences, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

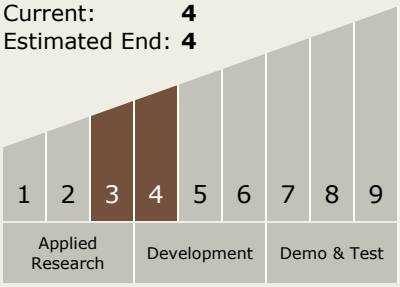
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Joel A Silver

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



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Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.8 Ground and Flight Test Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System